THE CLAIMS

What is claimed is:

1. A method of providing a regular outline in a useful layer of material that is transferred from a source substrate onto a support substrate during the fabrication of a composite substrate for subsequent use in electronics, optics, or optoelectronics, which comprises:

providing a shoulder on a front face of one of the source or support substrates about its periphery, wherein the shoulder defines an inner projecting zone that has a top face, a sidewall and a regular outline;

molecularly bonding the top face of the projecting zone to a receiving face of the other of the source or support substrates; and

removing a portion of the source substrate to provide the useful layer having the regular outline on the support substrate.

2. The method of claim 1 wherein the shoulder is provided on the support substrate and the top face of the projecting zone is molecularly bonded to the receiving face of the source substrate.

3. The method of claim 1 wherein the shoulder is provided on the front face of the source substrate, the shoulder including the useful layer that is to be transferred, and the top face of the projecting zone is

molecularly bonded to the receiving face of the support substrate.

4. The method according to claim 1 wherein the shoulder is provided by machining or etching the periphery of the front face of the substrate.

5. The method according to claim 1 wherein the receiving face is bordered by a primary chamfer zone, a secondary chamfer zone, and a central zone having a flatness suitable for facilitating molecular bonding.

6. The method of claim 5, wherein the outline of the top face of the projection zone has a periphery that is smaller than the inner periphery of the secondary chamfer zone so that, when bonded to the receiving face, the top face does not contact the secondary chamfer zone.

7. The method according to claim 1 wherein the sidewall of the projecting zone is substantially perpendicular to the top face.

8. The method according to claim 1 which further comprises, prior to the bonding step, forming a zone of weakness within the source substrate.

9. The method according to claim 8 wherein the useful layer extends between the zone of weakness and the face of the source substrate, and after the bonding step,

the method further comprises detaching the useful layer from the remainder of the source substrate along the zone of weakness.

10. The method according to claim 9 wherein the useful layer is detached by at least one of applying stresses of mechanical or electrical origin, supplying thermal energy, or chemical etching.

11. The method according to claim 9 wherein the zone of weakness is formed by atomic species implantation or by a porous layer.

12. The method according to claim 9 wherein the shoulder is provided on the front face of the source substrate prior to forming the zone of weakness.

13. The method according to claim 12 wherein the height of the projecting zone of the source substrate is greater than or equal to the thickness of the useful layer.

14. The method according to claim 1 wherein the height of the projecting zone is 10 nm to 200 nm or more.

15. The method according to claim 1 which further comprises polishing an exposed face of useful layer after detachment from the source substrate.

16. The method according to claim 1 wherein the support substrate is produced from silicon; silicon carbide; gallium arsenide; indium phosphide; or germanium.

17. The method according to claim 1 wherein the source substrate is formed from a semiconductor material.

18. The method according to claim 17 wherein the semiconductor material of the source substrate is silicon; germanium; compounds of silicon and germanium; silicon carbide; gallium nitride; gallium arsenide; or indium phosphide.

19. The method according to claim 1 wherein at least one of the molecularly bonded faces includes a layer of an insulating material.

20. The method according to claim 1 wherein the molecularly bonded face of the source substrate includes a layer of an insulating material.